DOCUMENT RESUME

ED 065 818 CG 007 436

AUTHOR Lenning, Oscar T.; Johnson, O. Bernard
TITLE Exploring College Success: Where Should We Go From Here?
INSTITUTION American Coll. Testing Program, Iowa City, Iowa.
PUB DATE Mar 72
NOTE 31p.; Paper presented at the American Personnel and Guidance Association on March 25-30, 1972 in Chicago, Illinois

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Achievement; College Graduates; College Role; Colleges; *College Students; Educational Objectives; *Evaluation; Failure Factors; Grades (Scholastic); *Performance Factors; Prediction; *Success Factors

ABSTRACT

Grades and persistence have long dominated research concerning college success, but there are many important types of college success that should be considered in evaluating the effects of a college program. A thorough review of thousands of research articles published during the decades of the 50's and 60's revealed over 20 broad developmental areas that are considered important criteria of college success by various researchers. Some published research studies relating the criterion to other variables in an attempt to understand or predict the criterion were found for each area. There is an acute need for new research priorities and a new research outlook in the area of college success. Reappraisal and redefinition must take place, new criteria and predictors must be explored, specific methodological and philosophical pitfalls of the past must be avoided, and steps must be taken to maximize the practical impact (on students, college officials, faculty, society, etc.) of such research. (Author)

ED 065818

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

EXPLORING COLLEGE SUCCESS: WHERE SHOULD WE GO FROM HERE?[1]

Oscar T. Lenning O. Bernard Johnson

The American College Testing Program

In the summer of 1967, Commission IX (Testing and Prediction of Academic Success) of the American College Personnel Association inaugurated a project to review the literature on nonintellective factors related to success in college. As it developed under the continuing sponsorship and funding of The American College Testing Program, the scope and comprehensiveness of the project became comparable to Feldman and Newcomb's study about the impact of college on students (1969). Fortunately, although it was very much related to and covered some of the same ground that was being covered by Feldman and Newcomb in developing their important contribution to the profession, the present project turned out to be quite complementary to their work and a number of new dimensions have been added.

Although the commission members had originally been thinking in terms of grades and persistence as the criteria for college success, it was decided that other types of success were just as important and should also be explored. What one person considers success may not be success for another, and this is definitely true on the college campus. For example, some students merely want to persist while others would consider it a personal failure if they did not graduate with honors. Some consider their primary purpose to be preparing for a job while others are concerned about developing their social skills, developing a philosophy of life, finding a suitable marriage partner, etc. In addition

---

[1] Paper prepared for the symposium "Exploring College Success: Where Should We Go From Here?" presented at the 1972 annual meeting of the American Personnel and Guidance Association, March 28, 1972, Chicago, Illinois.

CG 007 436

to college success as seen through the eyes of the student, college success can be defined from the perspective of the student personnel profession, the individual colleges, governmental agencies, society in general, and interested persons such as parents or relatives. Because of this broad emphasis that developed and was carried out in the project, the initial report of the study has been entitled "The Many Faces of College Success and Their Nonintellective Correlates." This initial report, which should be published later this year, will consist of selected annotations plus a complete listing by category of all references found.

The initial phase of the project involved searching the Psychological Abstracts back through 1957 for research articles dealing with anything that might be considered college success. These references and pertinent information were recorded on specially prepared evaluation sheets. Over 2,000 references were thus identified, after which the sheets were sorted into criterion categories and then into subcategories.

Once some college success categories and the foci of the study had been ascertained, a thorough search of the literature was initiated. Searches were made of the various indexes and published books of abstracts in education, student personnel work, psychology, sociology, and medicine. Searches were also made of Books in Print, of library card indexes, and of references listed at the end of books and journal articles. Further references were found by paging through tables of contents and pages of volume after volume of journals available in the libraries of The University of Iowa and of The American College Testing Program. Interestingly, this latter method unearthed some of the most unique and creative studies that were found.

Even though the decision was made to limit the review only to published articles and books, dissertations, and pertinent ERIC entries, over 4,000

different references were located, a number of which are reviews of literature or discussions rather than study reports. Coverage of such studies using college students as subjects is quite comprehensive and is complete through the decade of the sixties.

Only a start has been made in compiling a summary and synthesis of our extremely large mass of data. However, enough impressions have been gained during over four years of scanning, reading, and studying the literature that we are now prepared to provide a preliminary (and it should be emphasized that this is only preliminary) evaluation of the research that has been done on college success and to make some recommendations for the future. It is clear that there are acute needs for new research priorities and outlooks in the area of college success. Our hope is that this paper and the discussion in reaction that results from this presentation will help to stimulate action in the desired direction.

A Classification System for College Success

One of the noteworthy results of the project on college success was the development of a criterion classification system with broad categories and subcategories of success as defined by various publics. As mentioned previously, the categories of college success were, in a manner of speaking, empirically derived. For each criterion area specified, a number of research studies relating the criteria to other variables were found. Some of these studies actually attempted to predict the criterion while others were concerned only with trying to provide insights and to broaden the level of understanding of the criterion.

The categories of college success derived in the project are listed in Figure 1. Note that practically all of the criteria for which research

studies were found can be considered in a developmental framework. There are seven broad categories with each having two or more subcategories that are usually also rather broad and abstract.

Although there are many other important types of college success that should be considered in evaluating the effects of college (and especially in this age of accountability), grades and persistence continue to dominate the research concerning college success. Even during the last five years, studies of nonintellective correlates of grades and persistence totaled almost as many as the studies for all of the other college success categories put together. Although the majority of studies in this area explored variables that had already been rather thoroughly researched using the same methods, there were some unique and creative studies. Many investigations of other criteria also looked at grades, as an aside, probably because grades were readily available.

Because several dozen different reviews of literature were found that seemed to cover the area of grades and persistence adequately up through 1963 and because of the volume of literature in this area, only studies in this area published since 1963 were included in the current review. It should be emphasized that this restriction was applied only to the grades and persistence area.

A synthesis of all of the data has not yet been attempted although it is hoped that we can begin such an analysis in the near future. Therefore, we are not now in a position to provide a comprehensive overview of relationship patterns for the various college success areas. Because of this and in order to keep this section of the paper fairly brief, we will merely say a few words about each broad category of success and mention some of the findings that were noted as we categorized the various studies.

Grades and persistence studies were subcategorized according to type of predictor. The following 16 predictor categories were used: (1) personality and adjustment; (2) stress and anxiety; (3) motivation, aspiration, and need achievement; (4) attitudes, values, and needs; (5) interests; (6) study methods and academic habits; (7) extracurricular activities; (8) application blanks and biographical questionnaires; (9) parental characteristics and family relations; (10) socioeconomic level; (11) self-concept; (12) ratings of others; (13) interpersonal relations and influences of others; (14) high school and geographic factors; (15) college environmental factors and programs; and (16) unique and miscellaneous variables. Predictors in the last category have included such variables as age, sex, ethnic or religious background, race, birth order, marginal utility time functions, physiological factors, and cognitive styles.

Some significant relationships with grades and persistence have been found for all sixteen categories, at least for certain colleges or college departments. Prediction is another matter, and it is much more difficult to predict attrition than it is to predict grades. Secondly, nonintellective variables would seem to be more important in explaining attrition than in explaining grades, although they are undoubtedly important for grades, too. Concerning the prediction of grades, it is doubtful whether many nonintellective predictors will be found, at least in the near future, which will in most instances and most locales add to the predictive accuracy over that obtained using high school grades, aptitude-achievement tests, and past college grade success. There do, however, seem to be some promising variables for particular colleges and particular types of students, e.g., Aiken's biographical inventory (1964), Martin's (1964) academic interest scale, and Benson's (1967) division of time inventory.

The distinction between differential prediction and absolute prediction is important here (Horst, 1954, 1955). In predicting grades for a group of courses or majors, differential prediction searches out what is unique about each course so that relative success in the various courses or majors is predicted. Absolute prediction searches out what is common among the courses or majors so that overall success across them can be predicted. Absolute prediction is desired for administrative decision making, e.g., college admission, while differential prediction is desired for individual guidance and decision making concerning majors and courses. Lunneborg and Lunneborg (1966, 1968) concluded from their studies that biographic data were better differential predictors of college grades than were measures of academic ability (Washington Pre College tests) and prior academic achievement (high school grades in specific areas). However, the academic predictors were better absolute predictors of college grades than were the biographic data.

Intellectual development is differentiated from grades and persistence in that the focus is on intellectual attitudes, cognitive skills, and thinking style. Although an intellectual outlook and "learning for learning's sake" have been a supposed trademark of liberal education for many years, little research has explored college effects and variable relationships in this area. There do seem to be some differential college effects, but whether these are the result of student input characteristics or of actual college effects remain to be determined.

Much more research has explored other types of intellectual development. Particular emphasis has been placed on the development of cognitive creativity in children and secondary school students, and much of this research may provide insights for college students also. However, a number of studies have specifically examined creativity in college students. Although

a number of relationships have been found, many questions about the character and the encouragement of creativity, originality, abstract thinking, and analytical manipulation in college students (and other age levels) remain unanswered.

There are two broadly defined ways of viewing personality: (1) as something which influences behavior or (2) equating it with behavior itself. Most American social scientists have been strongly influenced by European schools of thought and tend to stress the integrative configural aspects of personality. They see it as something which influences behavior. This particular way of viewing personality has given rise to several approaches all aimed at explaining personality. Of these several approaches, the situational one is most applicable in terms of colleges affecting college success. This approach emphasizes the immediate environment in which a person finds himself, and the focus is on learned roles, e.g., adulthood.

Most studies of personality change in college students have assumed that the college experience was a factor in bringing about the changes, e.g., the observed changes in autonomy, authoritarianism, dogmatism, and independence. However, to date there has been little research done to determine if students would have changed in a similar way by not attending college. The work of Plant and associates at San Jose State College is a noteworthy exception.

Developmental psychology has hypothesized and found some evidence to support the existence of a natural pattern of development through adolescence, with children reaching various developmental plateaus at different ages congruent with their psychological makeup and experiences. But the question arises about whether aspects of Havighurst's (1952) developmental sequence, assuming it exists, could be just as effectively accomplished outside of the college. It

may be asked whether the college experience will impede or accelerate different types of development in comparison to noncollege people in this age range.

It should be mentioned that there are a number of problems with making change comparisons between college students and noncollege students, some which are methodological while others involve ethical and moral considerations. For one thing, those not going to college are such a diverse group and their post-high school experiences differ much more than do those in college. Furthermore, the noncollege groups (which may be differentiated by post-high school job categories) should be matched to the college group not only on age and sex but on other important factors such as high school, family background, ability, and high school record. The university researcher might gain access to such data for the noncollege students through cooperation from the high schools from which his college students came, but the high school might consider it unethical to release such information to the researcher. Gaining the cooperation of the noncollege subjects would be a special problem, and their response rate might be quite poor in comparison to that for the "captive group" in college. In addition, the personality area is quite sensitive in the minds of many citizens. For example, the use of particular personality inventories might risk being charged with "invasion of privacy" from some quarters while other people might consider some of the personality items immoral and unethical.

In the psychological adjustment and physical health area, there was almost a complete lack of studies concerned with college student physical health. On the other hand, an abundance of research has dealt with the psychological adjustment of college students and much of that covered in the personality change section is related to psychological adjustment. However, few studies have dealt with the possible effects of college on psychological adjustment other than the negative aspect of causes of maladjustment. Those

studies exploring mean change in psychological adjustment have found a general improvement in adjustment during the college years, but this may very well be the result of increased maturation with age rather than the result of college experiences. An emphasis on the college helping develop optimum psychological adjustment has been exhibited by many counseling studies, but they have dealt primarily with maladjusted individuals.

Concerning factors related to the development of self-appraisal habits, realism, and aspirations, most of the studies have dealt with aspirations. Some work has been done on the aspirations of college students for graduate school, medical school and particular occupations, but the most attention has been focused on high school seniors and their aspirations to attend college.

Adjustment to college is undoubtedly related to psychological adjustment for many students, but it has been included as a separate category. Psychological adjustment indicates an overall personal ability to see reality, to adapt, and to cope with one's situation. Orientation programs are a primary method colleges have used to help students adjust to college, and they are designed for normal, psychologically adjusted young people.

Adjustment to college includes <u>not</u> only an ability to cope with the new situations confronted in the college environment but also with positive reactions to and satisfactions with college. A student may be quite well adjusted psychologically and still be unhappy or unwilling to adjust to the college situation. In fact, it is possible that some students do not adjust to the college environment primarily because they are highly adjusted psychologically.

Far too little effort has been expended by most colleges to study the affects on college adjustment of different types of students made by various campus student personnel programs and to explore new ways of helping their students. Few studies were found in the published literature that attempted

to provide such insights about college adjustment. In fact, most of the insights gained came from studies categorized in the grades and persistence section of the survey where former students were asked why they dropped out of school.

There appears to be general agreement that the college experience should help a student develop socially among other things. It probably would not be too extreme to see social development and academic achievement, along with occupational development, as the prime criteria for college success. The most important social interest for many students may be popularity or to be regarded as a leader on campus.

Current research indicates that certain categories of student leaders have differing personality makeups from other students and from students in general. Concerning interpersonal relations, social skills as well as student characteristics are important. In both leadership and interpersonal relations, as in extracurricular participation, past success and satisfaction have an important bearing on present success and satisfaction.

Prejudice and ethnocentrism were the focus of some studies in the social development area. Apparently colleges can have an important effect in this area, but it is still unclear under just what conditions the effect occurs.

Most of the research in the artistic area has been concerned with program and student factors related to artistic creativity and skills. The fact that little research has explored the cultural and artistic appreciation area is unfortunate because this criterion is of more concern to college officials than is artistic skill development. Ever since the Renaissance of the Middle Ages, such goals have been considered important by various segments of society; and they are a hallmark of liberal arts education. The research that has been done in the cultural-aesthetic appreciation area indicates that college students

do tend to grow in this area. How the college can increase or maximize such growth is primarily "arm chair" hypothesis and conjecture at this time.

College officials, including those at secular colleges and universities as well as those at church-related institutions, want the college to help students develop morals, values, healthy attitudes, and a philosophy of life. There is wide disagreement, however, about the actual change desired in students. Some officials want students to develop some specific moral and value system and philosophy of life while others merely want their students to develop a value system and a philosophy of life of some kind, of the student's own choosing.

In a landmark study over a decade ago Jacob (1957) concluded that students exhibited little, if any, change in values during the college years. Recent research has contradicted his finding, however. For example, other results have indicated that students definitely tend to become more liberal during the college years and more conservative after graduation.

Once again little has been done to ascertain the interactions of student characteristics and environments and to determine what particular aspects of the environment are having an effect(s). To illustrate, research on changes in religious attitudes and values has generally shown a decline in religious orientation during the college years. Yet, Knapp and Holzberg's (1963) findings in their study of college students volunteering for a program of service to mental patients seem to suggest the possibility, although they did not look at change, that special programs and experiences could possibly increase students religious interests. Furthermore, officials of some colleges under fundamental religious control would contend that numbers of their students are becoming more religious as a result of their college experiences. Even in a study where

nearly everyone changed toward less religiosity (Hites, 1965), there were large individual differences in the amount of change found.

If the goal of a college is to instill values of citizenship, humanism, and other socially desirable values in its students, officials can turn to a number of studies using college students to explore the mechanics of attitude and value change and to develop special procedures that will bring about such change. Interestingly, some general studies which use college students solely because they are available for psychological experiments never become a really integral part of the literature on colleges and students because that is not their emphasis, e.g., Rosnow and Robinson's (1967) book on experiments in persuasion. Yet, it is clear from our experience that such studies can make important contributions if integrated with the college literature. Similarly, studies outside of the fields of education, psychology, and social psychology have sometimes been overlooked by psychologically-oriented student personnel workers.

There are a number of other types of "success" that normally would not be thought of as college success. There was enough research literature for five of these types of college success to be included as separate subcategories.

Research on the development of basic academic skills in college students has been generally slighted, except for study skills. However, with the advent of special college programs for disadvantaged minority-group students and with the community college emphasis in the sixties on remedial or developmental education programs, interest in this area has increased markedly. Indicative of this trend is the fact that Feldman (1972) included in his new book of readings on the College and Student a paper by Lenning, Munday, and Maxey (1969) dealing with changes on basic college-potential variables during the first two years of college.

Much research has been undertaken in an attempt to describe the development of the construct regarding basic motivation to succeed. Such research has dealt primarily with the construct called "need achievement." The direction or focus of this research may now be shifting slightly in the direction long proposed by proponents of symbolic interaction theory. The result . increased focus on specific goals and cues rather than on vague constructs such as motivation and need achievement.

The theoretical and empirical work in the area of vocational development is voluminous when compared to most of the other areas we have discussed. Holland and associates have been especially active over the years in exploring the vocational development of college students. Others active in this area include Crites, O'hara, Osipow, Roe, Super, and Tiedeman.

Post-college successes of various kinds are major college goals for most students and colleges. Research is lacking in this area although there are some alumni studies that have made major contributions toward understanding the effects of the college experience on later adult success. Examples are: Newcomb and associates' (1967) study of Bennington College alumni, Freedman's (1962) report of Vassar College alumni, and Campbell's (1965) study of people who had been counseled as University of Minnesota students 25 years earlier. Other sources of data in this area are the studies of prominant or successful persons, e.g., Roe's (1953) studies of scientists. In such studies, however, college effects are only tangential to the focus of the study.

Since the Berkeley disruptions in 1964, "student power" has increasingly become a topic of research as well as of conversation. The main college goal of a number of students is to change the college or society through student power. This is their criterion of college success.

Few research studies using college students and colleges have been conducted on other variables that could be considered "college success." This includes such categories as development of an ability and a willingness to "speak up" or to "stand up and be counted," development of a willingness to take necessary chances and to be adventuresome, development of time-awareness, and success in finding a proper mate during college.

Problems with the Research on College Success

In a delightful address in 1965 to Division 14 of the American Psychological Association, Marvin D. Dunnette (1966) outlined six "fads, fashions, and folderol in psychology" which he felt summarized what was wrong with the profession. Several of his points are very much applicable to the research that has been done on college success. His first heading was titled "The Pets We Keep" or alternately "What Was Good Enough for Daddy Is Good Enough for Me." He was talking about a premature commitment to a particular theory or research method. As was mentioned in the preceding section the bulk of research on college success continues to be in the area of grades and persistence, with many studies repeating the well-traveled paths that hold no real promise of adding important new knowledge to the profession. Also, in the opinion of many the analytic methods used in some studies raise questions of appropriateness. But why are innappropriate methods used? Perhaps some of these researchers have a "pet" method they almost always use or perhaps many of them are unfamiliar with other more appropriate methods and do not have access to a statistician.

Something that may be contributing much to the problems mentioned above is our system of graduate education. It is questionable whether the majority of graduate schools in this country are providing an adequate back-

ground in research design and methodology. Secondly, there is a tendency for particular "schools" of thought and methodology to predominate in a university. Furthermore, it is probable that some graduate students are overly influenced by the preferences and biases of their major professor.

Dunnette's second heading was entitled "The Names We Love" or "Whats New Under the Sun." What he was talking about here were the imprecise definitions and the vague constructs prevalent in various areas of psychology. He says:

> Perhaps the most serious effect of the game is the tendency to apply new names in psychological research widely and uncritically before sufficient work has been done to specify the degree of generality or specificity of the "trait" being dealt with. Examples of this are numerous--anxiety, test-taking anxiety, rigidity, social desirability, creativity, acquiscence, social intelligence, and so on--ad infinitum. (p. 345)

Dunnette's next title was "The Fun We ve" or "Tennis Anyone?" In this fad, the researcher gets so caught up with computer capabilities or testing null hypotheses that he forgets the real problem and also perhaps forgets to personnally look at the data itself. Dunnette believes this is primarily responsible for what he calls the "little studies" or the "little papers" of psychology, which we found to be so prevalent in research on college success. Actually, small studies can make real contributions to the field if they deal with parts of important problems and if they can be synthesized and integrated. The negative reaction of Dunnette is not against such "little studies," but rather against those little studies where the research is poorly designed, poorly documented, and exploring something of little worth. Furthermore, the emphasis throughout the sixties on "number of research publications" as an important variable for faculty evaluation has been a central part of the problem. Because of this emphasis, some researchers have been more concerned with

adding to their publication list and with merely going through the motions of research than with making contributions for the good of our young people and of our society.

The big studies sometimes run into a problem with tests of significance also. A number of large-scale studies reported a list of statistics and whether they were statistically significant. When you have 10,000 subjects, the question may be raised about what real practical value is it to be told that a mean difference, a chi square, or a correlation is statistically significant to the .05 or .01 level?

A final heading of Dunnette's that should be mentioned is "The Secrets We Keep" or "Dear God, Please Don't Tell Anyone." He reported a paper by Wolins (1964), who wrote to 37 authors asking them for the raw data on which journal articles were based. Of the 32 authors replying, 21 no longer had their raw data. Wolins did reanalyses on the seven sets of data he was able to obtain and found that three of the studies had gross errors which changed the outcome of the study. Dunnette includes in this category the following types of problems, all of which abounded in the reports on studies of college success: statistical difference tests reported without their corresponding means, SDs, and the correlations between the two variables; experimenter biasing factors; incomplete descriptions of methodology; failure to carry out or report cross-validation studies; and failure to carry out or report replication studies. Dunnette also reported, and this may or may <u>not</u> be extensive, that some researchers have the improper practice of dropping subjects from their analyses.

After reading Dunnette's fascinating account, is it any wonder that syntheses of a large number of studies in the literature are difficult to

accomplish? The trouble is that there were also a number of other serious research pitfall noted in many of the studies reviewed during the present project.

Most of the studies did not use control groups. For example, as mentioned in the previous section, no attempt was made in almost all of the studies on change to examine change in comparable nonstudents during the same interval of time for which change was being examined for college students.

Concerning studies of change, many of the researchers made no attempt to control for student input characteristics. For example, it is common for change to be related to aptitude, and so aptitude is one variable that should often be controlled.

There are a number of ways to control for inputs. Examples of simple experimental methods are matching or stratification. However, sophisticated statistical methods of control such as analysis of covariance may be called for in some cases. Because of a large sample size matching procedures may be impractical, and sometimes matching or stratification do not give the degree of control desired. Stratification gives only gross control on the variables of concern. Secondly, the desire may be to use the intact groups for which differences are to be examined. Furthermore, analysis of variance requirements of proportionality of cell frequencies may prohibit the use of stratifying and matching may distort the distribution of one or more of the groups being compared. In addition, it may be desired to control on a number of groups and in some cases it becomes desirable to later control on unanticipated variables. For research strategies in studying change or college impact, see Harris (1963) and Feldman (1970).

Many of the student samples in single campus studies were quite small and they often appeared to be just a "grab" sample with no real attempt to

have representativeness. Furthermore, many of the small samples on which one-tailed t-tests were used probably did not meet the "normal distribution" requirements for such a test, and a two-tailed t-test or nonparametric tests should have been used instead. Different statistical procedures have different distribution requirements. For example, when group comparisons are to be made, the relative homogeneity of the groups becomes important. Researchers all too often completely ignore such considerations.

Many studies did not explore the two sexes separately. From other studies, it was apparent that there were important sex differences on many of the variables being explored. To demonstrate the seriousness of this, suppose you are studying change and it happens that both sexes change a large amount, but in opposite directions. If you look only at change for the total group, you will erroneously conclude from your results that no change has taken place.

Most of the studies examined diverse groups of students such as freshmen or a psychology class. It is relatively easy to obtain the cooperation of such groups and practical also in the sense that they may logically be considered representative of the freshman class or of the student body as a whole. In many cases there are undoubtedly interactions and confounding that mask any results. By examining specific subgroups of students, e.g., curricular categories, changes and relationships may become apparent that would not become apparent otherwise.

Another methodological problem is the use of invalidated instruments. Some studies used locally constructed instruments that had never been field tested. However, some of the widely used and accepted personality tests or inventories as well as other instruments have questionable validity because of the nature of the constructs being studied. Furthermore, reliability is often poor, which also affects analyses that are attempted.

It should also be mentioned that there are numerous and possibly important groups of college students on which practically no college success research of any kind has been conducted. Examples of such groups are full-time adult students, part-time and evening students, foreign students, physically handicapped students, returning veterans, and students from unique subcultures. However, it is also true that many important questions concerning college success have not really been touched on for even the often-researched groups of students.

A final problem noted was the "helter skelter" way the social science professions have of disseminating research results and of applying them to practical situations so that they will eventually have a genuine impact on the student and his college and on society. Not only is there a lack of coordination in communicating research results, but much of the research is quite old by the time it is published. Hopefully the ERIC system will continue to make progress in reforming our research communication system.

Conclusions and Recommendations

Placing success into its proper sociocultural perspective requires the recognition that success in general is culturally defined. A given culture determines, to a large extent, success through the socialization process. This is achieved through establishing guidelines in the form of norms and/or standards which a socialized person is expected to achieve in order to function. These standards cover a wide range of activity from emotional expression to cognition.

Socialization is a learning process designed to provide each member of a given culture with criteria for selecting the appropriate role for a given situation from a host of alternatives. This process is based on the assumption

that individuals must be socially conforming, which assumes, as Inkeles (1968) points out, that individuals must "learn to be reasonably responsive to the pattern of social order and to the personal needs and requirements of the other persons with whom he is in immediate contact."

Society's most concentrated attempt to influence this process is through direct instruction and example, starting with the nuclear family. Parents have at their disposal an assortment of child training techniques provided by their own culture and learned during their own childhood. To reinforce parental training, large complex societies have designated formal agencies such as schools; and in many instances these agencies may overshadow the influence of the family in the socialization process.

Colleges reflect only one aspect of a continuous dynamic process. To perceive the total picture we must consider the rest of the process. It is impossible to explain college success by isolating it, taking it out of context, and studying it as though it were a separate entity in and of itself. It is part of an ongoing process and can be understood only as such.

Perhaps it would be more reasonable to view success in terms of competence. Inkeles (1966) defines competence as follows:

> The ability to attain and perform in three sets of statuses: those which one's society will normally assign one, those in the repertoire of one's social system which one might reasonably aspire to, and those which one might reasonably invent or elaborate for oneself. (p. 265)

Competence assumes an individual to be relatively well acquainted with culturally defined alternative roles and statuses. And as a result of socialization a person should be able to successfully manipulate this complex of roles and statuses. The objective of socialization is to produce competent people as competence is defined by their particular culture.

Future research in the area of college success perhaps should both redefine success in terms of competence, and take into account the fact that success is culturally defined. To understand college success, one must approach it in the context of a much larger ongoing process--socialization, thus putting it in a more meaningful sociocultural framework. Conversely, the criteria of college success must be rooted in more specific, and operational data if we are to really do meaningful research in this area, e.g., goals and cues rather than motivation. Although theoretical constructs can serve the purpose of stimulating research and explaining findings, it is questionable whether they serve as adequate criteria of success. People keep disagreeing on what such variables mean; the definitions given are imprecise and abstract. The same exhortations apply to the predictors used in research on college success.

Although the term may no longer be in vogue, let us now do a little "brainstorming" about possible new directions for research on college success. We will offer several ideas that will hopefully stimulate your thinking, even though some of them are too idealistic and will probably turn out to be completely unrealistic.

Members of the counseling and student personnel profession have tended to come from psychological backgrounds. They have, therefore, interpreted college success in terms of psychological concepts. Perhaps we need to broaden our outlooks and to learn to work together with members of other professions, (e.g., sociology, anthropology, medicine, economics, biology) in multidimensional research teams and consortia. Examples of multidimensional approaches to college success include the pioneering efforts during the 1950's by Sanford and associates (1956) on personality development while in college and by Ginzberg and associates (1951) on vocational development.

In addition to cooperation among the professional disciplines, there should be a concerted effort to develop more cooperation among members within the student personnel profession. It was mentioned in the previous section of this paper that it is extremely difficult to synthesize the findings from all the little studies reported in the literature because of such factors as differences in sampling procedures, differences in criterion definition, and lack of documentation concerning the design and the results. Through use of a set evaluation form, we have been able to gather as much comparable data as possible from each study. However, many studies did not report all essential data.

One possible solution is for consortia among researchers and among colleges to become commonplace, and in each case it would be essential that there be strict coordination so that the small parts of the study would facilitate one another in a planned way. Many consortia in the past have failed or been largely ineffective because of poor leadership and coordination, a lack of real commitment on the part of participants, or related problems such as a lack of follow-through and cooperation by participants. Yet there have been some consortia that have been quite effective and successful. Before attempting large-scale consortia like we are proposing, it would be desirable to make an in-depth study of these former consortia to see why they were successful or unsuccessful. Hopefully, through careful planning (including pilot projects to try out the concept), proper leadership, and emulation of procedures used in previously successful consortia, the pitfalls of many people working closely together from widespread localities can be surmounted.

Effective consortia could allow expert design consulation to take place as a routine matter. Coordination on predictors, methods, and criteria could allow all of the little studies that make up a consortium to add up to a

significant whole that could indicate how colleges of different types and in different regions of the country differ. It would give people having access to data, but who do not have enough confidence in their research abilities to do research on their own, the opportunity to take part in significant research endeavors. Furthermore, the widespread development of such consortia, each consortium attacking a specific priority problem that has been agreed on by the coordinating agency and the participants, would do away with much of the college emphasis on "faculty research quantity rather than quality." Quality would be built into the system, while new and revolutionary procedures for distributing and synthesizing the professional research data could provide reporting credit to each researcher.

The current project, along with works like that of Feldman and Newcomb (1969), could provide a starting point of synthesizing the data on college success while the ERIC system could provide a possible distribution vehicle for the operating system. Also useful would be periodic ERIC summaries of a consortium effort, like the recent report on The Student in Graduate School (1972) prepared by the ERIC Clearinghouse on Higher Education and published by the American Association for Higher Education.

The question now arises about who should coordinate such consortia efforts. One possibility is to use the U.S. Office of Educational regional laboratories. Rather than funding the local research through contracts and grants, their function would primarily be to coordinate. Another possible coordinating agency would be a professional association or a consortium of professional associations in the area of concern, e.g., AAHE, ACPA, NASPA, NAWDC, APA, and ASA in the area of college success.

Would such a reorientation imply that we should replace the large-scale research being done by agencies such as ACE, ACT, the Berkeley Center for

Higher Education, ETS, Project Talent, WICHE, etc.? Certainly not!! The hope would be that such a new system could complement the work of, and cooperate with, these national research agencies.

A research system such as we have proposed also offers the possibility of minimizing the ethical objections to a national data bank of longitudinal data such as the one proposed several years ago by Astin and Panos (1966). Such a data bank is desirable for developing national and regional norms and for conducting representative large-scale studies, but real problems have developed concerning confidentiality of and access to the data. There has even been some talk in certain quarters of legislating against such data banks. The most sophisticated safeguards possible cannot completely insure that only authorized persons will gain access to the data. There would be less objection to gathering and keeping the longitudinal data, which is identifiable to particular individuals, at the local level. At a specified point in time, each participating researcher in a representative consortium could duplicate the data leaving out all information which could identify persons. The central office would then merge such identification-free data from all of the local sources into a data bank that would not have to be kept so confidential.

Would such a reorientation eliminiate the initiative of the individual researcher? We would hope not. Once the program was in full operation, it would be expected that a large number of these consortia would be taking place at the same time. They would be publicized well in advance of their starting date so that each campus researcher could take part in researching the problem that interested him the most. The researcher could, in addition, do supplemental analyses of his data that are of his own design. If he made a "breakthrough" and brought it to the attention of the coordinating agency, the experts there

could evaluate what he has done. It could be added to the large-scale design if appropriate.

There would still be separate individual projects going on for those who desired, and convention program sessions and the journals would hopefully continue (although some of them might include more theoretical expositions and position papers then they do now). Also, the individual researchers would be encouraged to submit their research to the consortia coordinating agency as a pilot study for a possible large-scale study. The institution that might be changed the most by such a reorientation is the doctoral dissertation.

One development reported in a recent ACT Technical Bulletin throws the spotlight on computer systems that either could help bring about such a national research program or could help inexperienced participants in the present research system to eliminate the pitfalls that have marked many of the research studies heretofore reported in the literature. Novick (1972) reported the development of a prototype computer-assisted data analysis system. He said the following:

> (Even those with) substantial training in, understanding of, and competence in statistical methods . . . are unlikely to exercise those skills often enough to maintain them at a high level of proficiency. These investigators can use and are typically receptive to guidance in their statistical work provided they remain in control of their own analyses. Investigators with lesser statistical skills will benefit from even more directive guidance through the maze of detail required of good statistical practice. For all investigators, the tedium of computation or alternatively, the maintenance of esoteric computer expertise, is a regrettable hindrance to their function of extracting meaning from data.
>
> The system described here is an interactive computer-based system for assisting investigators on a step-by-step basis in the use of a particular analytic tool--Bayesian analysis using the two parameter normal model. The example is meant to be suggestive of the kinds of

> computer-assisted data analysis programs that can be developed for use by scientific investigators. Programs such as these can also be used in the classroom and laboratory for teaching purposes, but beyond this they can be used by the practicing scientist in his day-to-day work . . . . An important feature of this program is that it interacts with the investigator in the English language. The investigator need not be familiar with computer languages or with the internal workings of the computer. He need only learn how to sign-in and sign-off the terminal and to make simple alphabetic and numeric responses. (pp.1-2)

It would seem probable that such "computer assisted data analysis system" capabilities could be inexpensively distributed to the various campuses through the use of terminals from a central computing facility. In addition to guiding the selection of samples, the selection of proper statistical analyses, and the actual computational procedures, the system could conceivably be programmed also to assist the researcher to avoid pitfalls in the interpretation of his study results. In addition, as new and improved statistical techniques (e.g., better ways to control for complex inputs) are developed, these could be incorporated into the system without having to worry about their misuse.

Whatever direction we go remains to be determined, but it seems safe to say that there is an acute need for new research priorities and a new research outlook in the area of college success. Reappraisal and redefinition must take place; new and specific criteria and predictors must be explored; methodological and philosophical pitfalls of the past must be avoided; and steps must be taken to maximize the practical impact (on students, college officials, facilty, society, etc.) of such research. Now developments in these various areas that may hold promise for the future include the following: the major effort to develop college output criteria now being carried on through WICHE, the application of Bayesian methodology to educational prediction (Novick, 1970;

Novick, Jackson, Thayer, & Cole, 1971) and the focus delphi technique (Hudspeth, 1970; Weaver, 1971). Hopefully these mark the beginning of a revolution in educational research in general and in college success research in particular.

Oscar T. Lenning and O.Bernard Johnson The American College Testing Program
EXPLORING COLLEGE SUCCESS: WHERE SHOULD WE GO FROM HERE?
A presentation at the 1972 annual meeting of the American Personnel and Guidance Association

FIGURE 1

Categories of College Success

A. Academic Success

1. Good grades
2. Persisting in school

B. Success Viewed as Intellectual Development

1. Development of an intellectual outlook and attitudes
2. Development of cognitive creativity, originality, abstract thinking, and analytic skills

C. Success Viewed as Personal Adjustment and Personality Development

1. Development of maturity, responsibility, autonomy, flexibility, and other personality change
2. Development of optimal psychological and physical health
3. Development of self-confidence, self-acceptance, and an appropriate self-concept
4. Development of self-appraisal habits, realism, and appropriate aspirations
5. Successful adjustment to and satisfaction with the collegiate environment

D. Success Viewed as Social Development

1. Development of social awareness, popularity, social skills, and interpersonal relationships
2. Development of leadership skills
3. Development of a respect for others and their views
4. Participation and/or recognition in extracurricular activities

E. Success Viewed as Aesthetic--Cultural Development

1. Development of aesthetic and cultural interests, appreciations, and feelings
2. Development of aesthetic creativity and artistic skills

F. Success Viewed as Moral, Philosophical, and Religious Development

1. Development of altruism, humanism, citizenship, and moral character
2. Development of attitudes, values, and a particular philosophy of life

G. Other Types of College Success

1. Development of basic academic skills
2. Development of the motivation to succeed
3. Vocational development
4. Post-college success due to college experiences
5. Student power
6. Miscellaneous

REFERENCES

Aiken, L. R., Jr. The prediction of academic success and early attrition by means of a multiple-choice biographical inventory. American Educational Research Journal, 1964, 1, 127-135.

Astin, A. W., & Panos, R. J. A national research data bank for higher education. Educational Record, 1966, 47, 5-17.

Benson, P. H. Multiple-regression analysis of a paired-choice division-of-time inventory in relation to grade point average. Journal of Applied Psychology, 1967, 51, 82-88.

Campbell, D. P. The result of counseling: Twenty-five years later. Philadelphia: Saunders, 1965.

Cronbach, L. J., & Furby, L. How should we measure "change"--or should we? Psychological Bulletin, 1970, 74, 68-80.

Dunnette, M. D. Fads, fashions and folderol in psychology. American Psychologist, 1966, 21, 343-352.

Feldman, K. A. Research strategies in studying college impact. ACT Research Report No. 34. Iowa City, Iowa: The American College Testing Program, 1970.

Feldman, K. A. (Ed.) College and student: Selected readings in the social psychology of higher education. New York: Pergamon, 1972.

Feldman, K. A., & Newcomb, T. A. The impact of college on students. San Francisco: Jossey-Bass, 1969. 2 vols.

Freedman, M. B. Studies of college alumni. In N. Sanford (Ed.), The American college: A psychological and social interpretation of the higher learning. New York: Wiley, 1962.

Ginzberg, E., Ginzberg, S. W., Axelrod, S., & Herma, J. L. Occupational choice. New York: Columbia University Press, 1951.

Harris, C. W. (Ed.) Problems in measuring change. Madison, Wisconsin: University of Wisconsin Press, 1963.

Harvey, J. The student in graduate school. Washington, D. C.: The ERIC Clearinghouse on Higher Education and the American Association for Higher Education, 1972.

Havighurst, R. Developmental tasks and education. (2nd ed.) New York: Longmans, Green and Co., 1952.

Hites, R. W. Change in religious attitudes during four years of college. Journal of Social Psychology, 1965, 66, 51-63.

Horst, P. A technique for the development of a differential prediction battery. Psychological Monographs, 1954, 68(9).

Horst, P. A technique for the development of a multiple absolute prediction battery. Psychological Monographs, 1955, 69(5).

Hudspeth, D. R. A long-range planning tool for education: The focus delphi. Albany, New York: New York State Education Department, 1970.

Inkeles, A. Social structure and the socialization of competence. Harvard Educational Review, 1966, 36, 265-283.

Inkeles, A. Society, social structure and child socialization. In J. Clausen (Ed.), Socialization and society. Boston: Little Brown and Co., 1968.

Jacob, P. E. Changing values in college: An exploratory study of the impact of college teaching. New York: Harper, 1957.

Knapp, R. H., & Holzberg, J. D. Characteristics of college students volunteering for service to mental patients. Journal of Consulting Psychology, 1963, 28, 82-85.

Lenning, O. T., Munday, L. A., & Maxey, E. J. Student educational growth during the first two years of college. College and University, 1969, 44, 145-153.

Lunneborg, C. E. Biographic variables in differential vs. absolute prediction. Journal of Educational Measurement, 1968, 5, 207-210.

Lunneborg, P. W., & Lunneborg, C. E. The differential prediction of college grades from biographic information. Educational and Psychological Measurement, 1966, 26, 917-925.

Martin, A. M. The development and successive refinement of an academic interest scale for the Strong Vocational Interest Blank. Educational and Psychological Measurement, 1964, 24, 841-852.

Newcomb, T. M., & et al. Persistence and change: Bennington College and its students after twenty-five years. New York: Wiley, 1967.

Novick, M. R. Bayesian considerations in education information systems. ACT Research Report No. 38. Iowa City, Iowa: The American College Testing Program, 1970.

Novick, M. R. Bayesian computer-assisted data analysis. ACT Technical Bulletin No. 3. Iowa City, Iowa: The American College Testing Program, 1972.

Novick, M. R., Jackson, P. H., Thayer, D. T., & Cole, N. S. Applications of Bayesian methods to the prediction of educational performance. ACT Research Report No. 42. Iowa City, Iowa: The American College Testing Program, 1971.

Rosnow, R. L., & Robinson, E. J. (Eds.) Experiments in persuasion. New York: Academic Press, 1967.

Sanford, N. (Ed.) Personality development during the college years. Journal of Social Issues, 1956, 12, 3-68.

Weaver, W. T. The Delphi forecasting method. Phi Delta Kappan, 1971, 52, 267-271.

Wolins, L. Responsibility for raw data. American Psychologist, 1962, 17, 657-658.